



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/822,853	04/02/2001	Hyun-doo Shin	Q59547	7185

7590 07/29/2004
SUGHRUE, MION, ZINN,
MACPEAK & SEAS, PLLC
2100 PENNSYLVANIA AVENUE, N.W.
WASHINGTON, DC 20037-3213

EXAMINER

LE, BRIAN Q

ART UNIT PAPER NUMBER

2623

DATE MAILED: 07/29/2004

9

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/822,853

Applicant(s)

SHIN ET AL.

Examiner

Brian Q Le

Art Unit

2623

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-13 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-13 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 02 April 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. ____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 6-8.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: ____.

Claim Rejections - 35 USC § 112

1. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

2. The term "regularity" in claims 2, 7 and 12 and the term "regular-dissimilarity" in claims 6, 8, 11 and 13 are relative terms, which render the claim indefinite. The terms "regularity" and "regular-dissimilarity" are not defined by the claim, the specification does not provide a standard for ascertaining the requisite degree, and one of ordinary skill in the art would not be reasonably apprised of the scope of the invention. The prior art rejection based on the Examiner's best understanding.

3. Claims 3-4 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention. The Examiner suggests the Applicant to represent claim 3 and 4 in a form of equation/formula to clearly indicate the claim limitation and must be supported by original disclosure. The prior art rejection based on the Examiner's best understanding.

Claim Rejections - 35 USC § 102

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

5. Claims 1-5, 7, and 9-12 are rejected under 35 U.S.C. 102(b) as being anticipated by Chang, "Data Resource Selection in Distributed Visual Information Systems", I.E.E.E. Knowledge and Data Engineering, Volume. 10, pages: 926-946 November 1998.

Regarding claim 1, Chang teaches a method of measuring a similarity (FIG. 3) between texture features of a first image and a second image (abstract), the method comprising the steps of:

- (a) computing a statistical dissimilarity (similarity measure/computation) between the first and second images (Page 928, column 2, last two paragraphs);
- (b) computing a perceptual dissimilarity (visual similarity) between the first and second images (Page 926, column 2, second paragraph); and
- (c) computing a dissimilarity (weight similarity determination) between the texture features of the first and second images based on the statistical dissimilarity and the perceptual dissimilarity (Page 938, first column, first paragraph).

For claim 2, Chang further teaches the method of claim 1, wherein the step (b) comprises the steps of:

- (b-1) computing regularity of the texture of the first and second images (Page 932, second column); and
- (b-2) computing a dissimilarity between the computed regularities of texture of the first and second images (Page 932).

For claim 3, Chang discloses the method of claim 1, wherein the step (c) comprises the steps of

- (c-1) determining the dissimilarity between the texture features as a value proportional to the statistical dissimilarity when the perceptual dissimilarity

is smaller than a predetermined threshold (Page 929, second column specifically observation 1).

Referring to claim 4, Chang also discloses the method of claim 1, wherein the step (c) comprises the steps of
(c-1) determining the dissimilarity between the texture features based on an exponent of the power of the statistical dissimilarity, the exponent being the perceptual dissimilarity, when the perceptual dissimilarity is smaller than a predetermined threshold (Page 929, second column).

Regarding claim 5, Chang teaches a method of measuring a similarity between texture features of images, the method comprising the steps of:
(a) computing a statistical dissimilarity $d(i, j)$ between two images i and j using a statistical-based texture descriptor (Page 929, second column);
(b) obtaining quantitative measurements $P.\text{sup.}(i)$ and $P.\text{sup.}(j)$ of texture patterns of the two images i and j in terms of regularity (Fig. 3 and page 929, first column); and
(c) obtaining a dissimilarity between the texture features by computing a dissimilarity $[\text{circumflex over } (d)](\text{.vertline.}P.\text{sup.}(i)-P.\text{sup.}(j).\text{vertline.})$ between the texture patterns of the two images i and j in terms of regularity, where $[\text{circumflex over } (d)]$ is assumed to be a predetermined function whose value is determined according to a range of a magnitude of a perceptual dissimilarity (Page 932, second column).

For claim 7, please refer back to claim 5 for the teaching.

Regarding claim 9, please refer back to claim 1 for the teaching.

For claim 10, Chang teaches the device wherein the perceptual dissimilarity computing part quantitatively computes the perceptual attributes (distance calculation) of texture of the first and second images (Page 929, second column, first paragraph and Fig. 4).

For claims 11-12, please refer back to claim 2 and claim 5 respectively for the teaching.

Allowable Subject Matter

6. Claims 6, 8 and 13 would be allowable if rewritten to overcome the rejection(s) under 35 U.S.C. 112, second paragraph, set forth in this Office action and to include all of the limitations of the base claim and any intervening claims.

CONCLUSION

7. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

The following patents are cited to further show the state of the art with respect to image comparison/similarity measurement:

U.S. Pat. No. 5,949,055 to Fleet, teaches automatic geometric image transformations using embedded signals.

U.S. Pat. No. 6,529,631 to Peterson, teaches apparatus for optimizing encoding and performing automated steerable image compression in an image coding system using a perceptual metric.

U.S. Pat. No. 5,394,483 to Daly, teaches method for determining visually perceptible differences between images.

U.S. Pat. No. 6,360,017 to Chiu, teaches perceptual-based spatio-temporal segmentation for motion estimation.

U.S. Pat. No. 6,591,006 to Niemann, teaches intelligent image recording system and method.

U.S. Pat. No. 6,256,409 to Wang, teaches method for determining a correlation between images using multi-element image descriptors.

U.S. Pat. No. 6,229,931 to Essafi, teaches process for the search of samples in images of a data base.

U.S. Pat. No. 5,644,655 to Windsor, teaches identification method and apparatus.

U.S. Pat. No. 5,852,823 to De Bonet, teaches image classification and retrieval system using a query-by-example paradigm.

Weinshall, "On view likelihood and stability", I.E.E.E. Pattern Analysis and Machine Intelligence, Volume 19, pages: 97-108, February 1997.

Art Unit: 2623

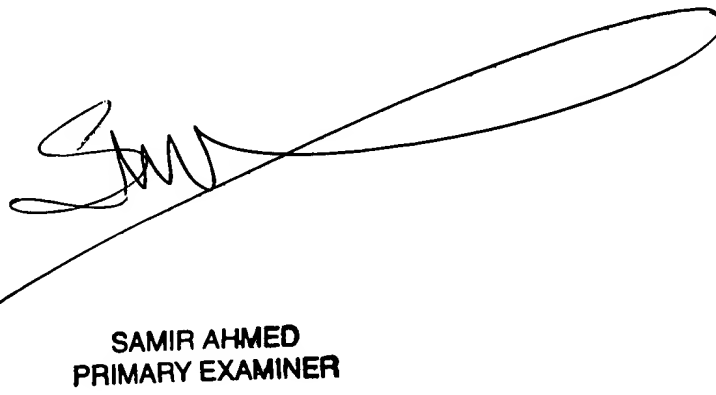
8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Brian Q Le whose telephone number is 703-305-5083.

The examiner can normally be reached on 8:30 A.M - 5:30 P.M.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Amelia Au can be reached on 703-308-6604. The fax phone numbers for the organization where this application or proceeding is assigned are 703-872-9306 for regular communications and 703-872-9306 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to TC Customer Service whose telephone number is 703-306-0377.

BL
July 14, 2004

A handwritten signature in black ink, appearing to read 'Samir Ahmed', is written over a long, sweeping horizontal line that extends from the left margin towards the right.

**SAMIR AHMED
PRIMARY EXAMINER**